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Several research problems were addressed this fiscal year. Canyon Ferry reservoir can be classified as a hypereutrophic system. As a result, water being released from the reservoir through the turbines is low in dissolved oxygen towards the end of the summer. This has resulted in the State of Montana notifying Reclamation that water quality standards are being violated. Further, the Kokanee salmon fishery in Hauser reservoir downstream from Canyon Ferry has sharply declined in the last few years. It has been suggested that operations at Canyon Ferry are limiting beneficial uses in this reservoir.

Broad scale limnological monitoring has been conducted by various groups on Lake Powell for the past several years. Smaller scale data are lacking, however, particularly in the inflow areas where data are needed to describe patterns and processes. These data are particularly important for modeling efforts underway on the reservoir.

The water quality of Lake Mead has been studied over the past years, and continues to be studied, with respect to the influence of the increasing urbanization of Las Vegas Valley and its effects on Las Vegas Wash and Bay. The scope of this study has expanded due to the increasing importance of water quality and public health issues in the area and the dependence of Las Vegas on Lake Mead for its drinking water supply. Like the Las Vegas area, the watershed of the Virgin River is also seeing rapid growth. Concerns are now arising as to what effects this growth and development are having on the Virgin River and what the impacts to water quality in Lake Mead will be.

(1) Provide a general overview of patterns of productivity in Canyon Ferry and Hauser reservoirs with respect to primary and secondary productivity, particularly with respect to fish biomass distribution in response to low dissolved oxygen releases from Canyon Ferry dam

(2) Conduct a test spill to determine:

(a) the feasibility of increases of dissolved oxygen levels to meet state standards

(b) the possible effects the spill may have on recreation in Hauser.

(3) Determine productivity patterns with respect to nutrients, primary and secondary productivity, and fish distribution in the in the San Juan River inflow into Lake Powell

(4) Begin study on the Virgin River inflow to Lake Mead. Goals of this project are to study inflow effects on water quality and changes occurring with increasing watershed development.

Data have only been analyzed for the test spill at Canyon Ferry Dam as of this time. Allowing a portion of the releases to go over the spillways resulted in a significant increase in dissolved oxygen in the river downstream of the dam. Initially it appears this would be one possible solution to the problem of low dissolved oxygen in the river below the dam. It does appear there may be some problem with nitrogen super saturation, but this will have

to be looked at in detail next season.

Nevada Division of Wildlife, Utah Wildlife Resources, USGS/CRD-MESC, Montana Fish Wildlife and Parks, Montana Power, USBR- Montana Area Office, USBR- Great Plains Regional Office, National Park Service

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